

An increase in dietary carotenoids is effective in preventing the reduction in plasma carotenoid concentrations from plant sterol- enriched margarines

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Background. Plant sterol-enriched margarines lower LDL cholesterol by 9-15% but they may also lower lipid-standardized levels of carotenoids by up to 20%. Whether this is likely to have adverse health consequences is unknown.

Objective: Firstly, to compare the effects on blood lipids of low fat (35% fat) margarines containing plant sterols or stanols compared to a similar phytosterol-free margarine and secondly, whether advice to consume specific daily amounts of foods high in carotenoids is effective in preventing the reduction in plasma carotenoid concentrations previously described.

Subjects: Forty six hypercholesterolaemic subjects completed the 3-way comparison. The subjects fulfilled the following entry criteria: BMI <31 kg/m², total cholesterol >5.4 mmol/L and < 8.5 mmol/L, triglycerides <4.5 mmol/L. The mean baseline LDL cholesterol was 4.4 mmol/L.

Experimental Design: A double-blind completely randomized crossover design contrasting 25g/day of a 35% fat, sterol-free margarine, a plant sterol margarine and a plant stanol margarine for 3 weeks each in a low saturated fat diet. The margarines contained 2.3 to 2.5g of plant sterols per 25g. Subjects were advised to eat at least 5 serves per day of vegetables and/or fruit with at least one of the 5 serves to be carrots, sweet potato, pumpkin, tomato, apricots, spinach or broccoli.

Results: The LDL cholesterol fall was 0.33mmol/L with the sterol margarine and 0.41mmol/L with the stanol margarine compared with the sterol-free margarine (p<0.001) with differences between them not significant. Total fat was 27% of energy in each period. There was no difference in plasma carotenoids compared with baseline, although both margarines significantly lowered lipid-standardised β carotene by 9% compared with the control period.

Conclusions: There was no difference in cholesterol-lowering efficacy between sterols and stanols. Although plant sterols lowered carotenoids relative to control, the advice to increase the intake of fruit and vegetables of specified types was effective in maintaining plasma carotenoid levels within the baseline values.